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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,719	03/19/2004	Thomas D. Barber	20.2903	2718
23718 7590 04/26/2007 SCHLUMBERGER OILFIELD SERVICES 200 GILLINGHAM LANE MD 200-9 SUGAR LAND, TX 77478			EXAMINER SHARON, AYAL I	
			ART UNIT	PAPER NUMBER
			2123	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/26/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/708,719	<b>Applicant(s)</b> BARBER ET AL.	
	<b>Examiner</b> Ayal I. Sharon	<b>Art Unit</b> 2123	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/31/06</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Introduction***

1. Claims 1-21 of U.S. Application 10/708,719 filed on 03/19/2004 are currently pending.
2. Examiner notes that header of pages 2-7 of Applicants' amendment filed 1/31/07 refers to application 11/124,528, rather than the instant application. Examiner interprets this to be a clerical error.
3. Claim 1 in Applicants' amendment filed 1/31/07 is listed as "currently amended", and the remarks (see p.6 of the amendment) indicate that that "[c]laim 1 is amended to correct a typographical error". Examiner interprets that the change was in line 10, changing "no less than" to "not less than."
4. This action is non-final.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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6. The prior art used for these rejections is as follows:
7. Freedman et al., U.S. Patent 7,076,370. (Hereinafter "**Freedman**").
8. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.
9. **Claims 1-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Freedman.**
10. In regards to Claim 1, Freedman teaches the following limitations:
  1. *A method for modeling borehole effects of an induction tool having a plurality of arrays that include at least one transverse array, the method comprising:*  
*selecting a formation-borehole model having a set of parameters, wherein the set of parameters comprises a direction of tool eccentricity;*  
(See especially, Freedman: col.2, lines 32-42; col.2, line 50 to col.3, line 4; col.3 lines 19-41)  
*determining initial values for the set of parameters;*  
(See especially, Freedman: col.3, line 44 to col.5, line 6)  
*computing expected responses for a selected set of arrays from the plurality of arrays of the induction tool, wherein the computing is based on the formation-borehole model;*  
(See especially, Freedman: col.3, line 44 to col.5, line 6)  
*comparing the expected responses with actual responses for the selected set of arrays;*  
(See especially, Freedman: col.3, line 44 to col.5, line 6)  
*adjusting values of the set of parameters, if a difference between the expected responses and the actual responses is not less than a predetermined criterion;*  
(See especially, Freedman: col.3, line 44 to col.5, line 6)

*repeating the computing, the comparing, and the adjusting, until the difference between the expected responses and the actual responses is less than the predetermined criterion;*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

*determining the borehole effects from final values of the set of parameters.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

11. In regards to Claim 2, Freedman teaches the following limitations:

*2. The method of claim 1, wherein the set of parameters further comprises a vertical formation conductivity and a horizontal formation conductivity.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

12. In regards to Claim 3, Freedman teaches the following limitations:

*3. The method of claim 2, wherein the set of parameter further comprises mud resistivity, a borehole diameter, and a tool standoff.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

13. In regards to Claim 4, Freedman teaches the following limitations:

*4. The method of claim 1, wherein the initial values for the set of parameters comprise at least one value determined from borehole logging data.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

14. In regards to Claim 5, Freedman teaches the following limitations:

*5. The method of claim 4, wherein the at least one value is selected from mud resistivity and a borehole diameter.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

15. In regards to Claim 6, Freedman teaches the following limitations:

*6. The method of claim 5, wherein the mud resistivity is determined by a mud resistivity sensor and the borehole diameter is determined by a caliper.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

16. In regards to Claim 7, Freedman teaches the following limitations:

*7. The method of claim 1, wherein the comparing comprises using a penalty function.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

17. In regards to Claim 8, Freedman teaches the following limitations:

*8. The method of claim 7, wherein the penalty function is based on squares of differences between the expected responses and the actual responses.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

18. In regards to Claim 9, Freedman teaches the following limitations:

*9. The method of claim 1, further comprising correcting measurements of the plurality of arrays using the determined borehole effects.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

19. In regards to Claim 10, Freedman teaches the following limitations:

*10. The method of claim 1, wherein the induction tool comprises at least one triaxial array.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

20. In regards to Claim 11, Freedman teaches the following limitations:

*11. The method of claim 10, wherein the initial values for the set of parameters comprises the direction of tool eccentricity determined from data obtained with the at least one triaxial array.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

21. In regards to Claim 12, Freedman teaches the following limitations:

*12. The method of claim 11, wherein the direction of eccentricity is determined from off-diagonal elements of an apparent conductivity matrix.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

22. In regards to Claim 13, Freedman teaches the following limitations:

*13. The method of claim 12, wherein the apparent conductivity matrix is rotated to produce a simplified matrix of apparent conductivities.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

23. In regards to Claim 14, Freedman teaches the following limitations:

*14. The method of claim 13, wherein borehole corrections are applied to the simplified matrix of apparent conductivities to produce a corrected matrix of apparent conductivities.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

24. In regards to Claim 15, Freedman teaches the following limitations:

*15. The method of claim 14, further comprising rotating the corrected matrix of apparent conductivities to correspond to an original tool orientation.*

(See especially, Freedman: col.3, line 44 to col.5, line 6)

**25. Claims 16-21 are rejected based on the same reasoning as claims 1-3 and 7-9. Claims 16-21 are system claims that recite limitations equivalent to those recited in method claims 1-3 and 7-9 and taught throughout Freedman.**

### ***Response to Arguments***

#### **Re: Claim Objections**

26. Applicants' amendments (see pp.4-5 of the amendment filed 1/31/2007)



Re: Claim Rejections - 35 USC § 102

27. Examiner finds Applicants' arguments filed 1/31/07 to be persuasive, and has withdrawn the previous 35 USC § 102 rejections, and replaced them with new rejections.

**Correspondence Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a bi-week, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

Any response to this office action should be faxed to (571) 273-8300, or mailed to:

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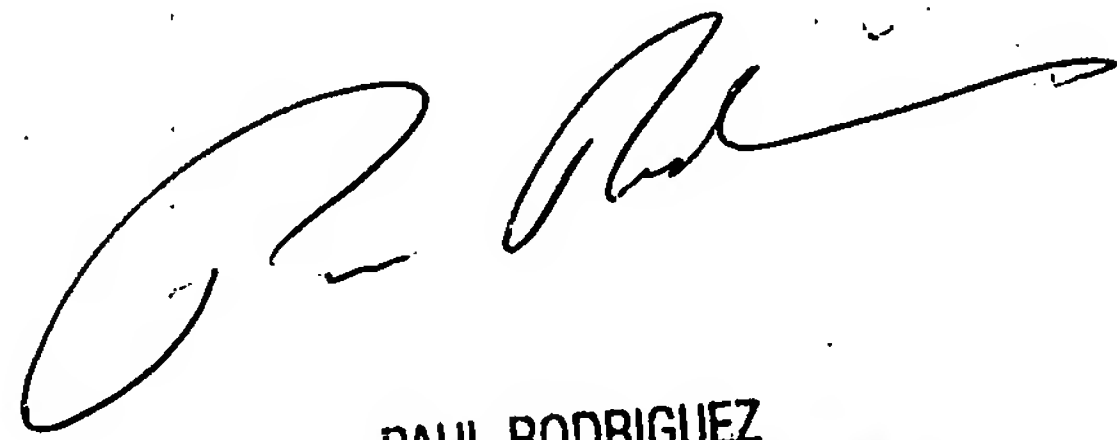
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon  
Art Unit 2123  
April 16, 2007

A handwritten signature in black ink, appearing to read "Paul Rodriguez", is written over a circular stamp.

PAUL RODRIGUEZ  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100